nearly three times as long as the width at the notch; frontal triangle elongate, continued considerably in front of the notch-line. Teeth $\frac{30}{30}$, slender, conical. The lower jaw rather slender and slightly bent up at the tips; symphysis rather keeled beneath in front.

Inhabits the upper parts of the Amazon River near Santarem.

The measurements are as follows, in inches and parts of inches :—

	Male.	Female.
Length of skull	13	12
——— of beak	7¼	6½
——— of tooth-line	6	5¾
——— of lower jaw	10¼	9⅛
——— of symphysis	2	1¼
Width of skull	6	5⅛
——— of beak at notch	2⅛	2¼
——— of forehead over notch	4¾	4¼

Mr. H. W. Bates, in his letter of the same date, observes :— "The *Tucuxi*, pronounced *Tucoshee*, is of a darkish black or fuscous colour. It does not roll over like the *Bouto*, but comes slowly to the surface to breathe."

BIBLIOGRAPHICAL NOTICES.

Manual of Geology, Practical and Theoretical. By John Phillips, M.A., F.R.S. &c. Griffin and Co., London and Glasgow, 1855.

The foundation of this work was laid twenty-five years ago,—in the 'Encyclopædia Metropolitana,'—and, without changing its general character, it has been enlarged and improved by the materials collected by the author and numerous fellow-labourers in the same field during the interval. Among the most important geological researches of late years has been the examination of the older rocks of Wales and the Border Counties, and the newer and not less interesting deposits of the tertiary series of Eastern England and the adjoining Continent. The author has devoted considerable space to these subjects; and, by a careful condensation of the evidence brought forward by the multitude of observers conscientiously enumerated in his preface, has given us a lucid and valuable *résumé* of *palæozoic and cainozoic* facts, which, together with the revised chapters on mesozoic history, form a really useful Manual of physical and topographical geology. Unlike many elementary works, this is far from being a compilation; for the author, without neglecting the observations of others, has observed for himself, and brings us his own enlarged and practical experience,—the fruit of years of scientific labour, both under official engagements and as separate undertakings. The man who has worked for himself in the field can best recognize the educational wants of others, and thus offer them the necessary elementary knowledge by which the inquiring mind may be led in the right direction to comprehend the philosophy of the closet and the facts of

the field. The mode of inculcation of such facts varies too much with books and teachers. The mere exercise of memory in learning a table of classification is a poor substitute for the knowledge obtained by the student from a good practical teacher.

After a succinct notice of the history of the science, in which the origin of inductive geology forms an interesting and instructive section, the author enters upon elementary views of the structure and composition of the crust of the earth and of the preservation and distribution of organic remains.

To this succeeds a series of chapters descriptive of the primary, hypozoic, palæozoic, mesozoic, and cainozoic strata, in the ascending order. In this respect we regard this plan of arrangement as preferable, inasmuch as it provides the student with the true successional ordination of the various geognostical phænomena. Thus he is better enabled to trace the origin of the successive and derivative strata,—the varying hydrographical areas more or less defined by these deposits,—and the gradual advance, in different directions and under varying circumstances, of vegetable and animal organisms; —and hence he is presented with a comprehensive view of the various phases of the earth's physical history.

Following the chapters on descriptive geology is a chapter devoted to modern causes in action,—a section which we are inclined to think should take its place at the commencement of the work; for the ordinary mind, when acquainted with existing physical agencies, not only better appreciates the present operations of nature, but possesses an index and a key to the multitude and apparent mystery of ancient physical phænomena.

Inorganic phænomena, more especially those connected with the effects of heat, are fully treated of in the next following divisions of the work;—one chapter being devoted specially to the subject of Mineral veins.

In a subsequent chapter, on the state of geological theory, we would particularly recommend to notice the section on geological chronology, in which the probable rate of accumulation of deposits is inferred from the study of the mechanical and chemical origin of strata,—the alternations of beds of different lithological characters, and of different natures, such as marine, freshwater, and igneous,—the succession of races of imbedded organic beings,—and lastly, the repetitions of convulsions, and the metamorphism of rock-masses. In the same chapter we find two useful tables illustrative of the distinct groups of animal life which have followed one another in a settled order of geological time. The one, adapted from M. A. d'Orbigny, affords a rough estimate of the proportional number of species of all animals in the several geological groups; the second, repeated from the author's work on Yorkshire, has reference to the distribution in time of the more prominent vertebrate types specially characteristic of the great geological periods.

The appendix of tables and calculations contains also some practical observations on the instruments used by the working geologist, namely, barometers, clinometers, &c., with directions for the benefit

of those persons who are anxious to furnish satisfactory data for the elucidation of questions connected with the general and special structure of rocks, such as dip, strike, divisional planes, faults, dykes, veins, cleavage, &c. One page only, and that in the Appendix, is devoted to the constituent ingredients of rocks,—a subject too little attended to, and for which might have been found a fitter and ampler space in the body of the work. A careful and useful glossary is added.

Without entering into any detail respecting the geological descriptions in this work, as regards the mineral character, distribution, and fossils of local deposits, we can but advert to a novel and extremely useful feature presented by Prof. Phillips's Manual. We allude to the lists of genera of organic remains occurring in each group or terrain of the geological formations. These lists are so arranged and printed that the genera peculiar to certain strata are at once recognizable, and the numerical proportion of genera and species are seen at a glance. In our notice of Morris's 'Catalogue of British Organic Remains' in Annals, vol. xv. p. 54, we recommended that such tabulated lists of genera and species should be made under the superintendence of the author of that work. Prof. Phillips, however, has with considerable labour eliminated the materials required for such categorical arrangement, in conformity with the geological classification adopted in that work, and has thus, with excellent judgement, enabled the student to comprehend at one view the numerical proportions, in family, generic, and specific groupings, of animal and vegetable life during the several geological periods; and those interested specially in the lower palæozoic rocks will find at p. 122 a table exhibiting the generic relations of the then existing great divisions of animal life during the Cambrian and the Lower and Upper Silurian periods.

One excellent feature of Mr. Phillips's book consists of the many well-executed illustrations of landscape-scenery illustrative of topographical geology. We wish that we could equally approve of the cuts intended to portray the characteristic fossils. Generally speaking, the imperfection of the specimens selected and the want of accuracy in the drawing render the majority of the figures almost useless for comparison.

This work, having features of its own both in palæontological and geological aspects, and being well stored with modern information, and characterized by the experience and philosophic opinions of the author, takes a high rank among elementary works on geology. As a text-book, embodying the real methods of geological investigation, this edition necessarily offers more complete evidence of the unity of the laws of nature, and of the correctness of the principles of geology enunciated in the previous edition,—principles which amidst all the activity of research are still unaltered, the methods of research and the lines of reasoning remaining the same.

Much remains to be done; the geologist has still great questions before him waiting for solution; his labours will be well directed and much lightened by such manuals of the science as those provided by Lyell, Mantell, Ansted, and Phillips.